

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 25 AUG 1999	2. REPORT TYPE N/A	3. DATES COVERED -			
4. TITLE AND SUBTITLE Multimodal Communication with Networked Information Systems		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Rutgers University		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES DARPA, Air-Coupled Acoustic Microsensors Workshop held on August 24 and 25, 1999 in Crystal City, VA., The original document contains color images.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 3	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Multimodal Communication with Networked Information Systems

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Figure 1: On-going research [1,2] is implementing user interfaces that transcend the capabilities of mouse and keyboard and provide enhanced flexibility, functionality and naturalness. The sensory dimensions of sight, sound and touch are employed simultaneously and in combination to expand human/machine communication. The client stations are networked on a system designed for collaboration over wire and wireless transport [3]. Dynamic control and allocation of resources (bandwidth, computing, storage) for heterogeneous user platforms are features of the network. Application areas under study include: (a) crisis management/disaster relief, (b) remote telemedicine/telerehabilitation; and, (c) mobile offices/wearable computers.

Figure 2: Advanced command center featuring networked collaboration, conferencing, and multimodal interfaces for participants. 2D and 3D displays permit object placement and manipulation by eye cursor, speech recognition, and virtual grasp.

References:

1. NSF Contract No. IRI-96-18854 (STIMULATE)
2. NSF Contract No. IIS-98-72995 (KDI)
3. DARPA Contract No. N6601-96-C-8510 (DISCIPLE)

Microphone Array

Smart Controller for Tactile Glove

Speakers,
Speech Synthesis

Automatic Speech
Recognition

Gaze Tracker

Force-feedback Tactile Glove



